

**TECHNICAL REVIEW DOCUMENT**  
**for**  
**MODIFICATION TO OPERATING PERMIT 96OPBO131**

Public Service Co – Valmont Station  
Boulder County  
Source ID 0130001

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June 2004

**I. Purpose:**

This document establishes the decisions made regarding the requested modification to the Operating Permit for Public Service Company's Valmont Station. This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis.

This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the request for modification submitted to the Division on May 12, 2004, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

**II. Description of Permit Modification Request/Modification Type**

The Operating Permit for the Valmont Station was issued on September 1, 2001. Public Service Company (PSCo) submitted a request to modify the permit on May 12, 2004. The purpose of the modification is to replace the existing coal crusher and upgrade the existing coal conveying system from the coal pile to the plant. The conveying system will be upgraded from its current capacity of 400 tons/hr to 500 tons/hr and the design rate of the new crusher will also be 500 tons/hr (the design rate for the previous crusher was rated at 400 tons/hr). Requested emissions for the new crusher and revised coal handling system are 0.53 tons/yr PM and 0.19 tons/yr PM<sub>10</sub>.

In addition, PSCo entered into a Voluntary Emissions Reduction Agreement with the Colorado Air Pollution Control Division that applies to the Denver metro area plants

(Arapahoe, Valmont and Cherokee). The agreement took effect on January 1, 2003. The agreement requires that calendar year SO<sub>2</sub> emissions from the Denver metro area plants not exceed 10,500 tons/yr or reduce uncontrolled SO<sub>2</sub> emissions by 70%. The agreement specified a calculation methodology to determine the percent reduction of SO<sub>2</sub> emissions. The provisions in the agreement were included in the August 25, 2003 revised Title V operating permit and the percent reduction calculation methodology was included in Appendix G. The source requested changes to the percent reduction calculation methodology.

Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications “are not otherwise required by the Division to be processed as a significant modification” (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that “any change that causes a significant increase in emissions” be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.B.36.h.(i)). According to Appendix D of Regulation No. 3 (Section I.F, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the PSD significance levels (15 tons/yr of PM<sub>10</sub> and 25 tons/yr of PM). Although the requested emissions (including uncontrolled emissions) are below the PSD significance levels, the modifications to the coal conveying system and the new crusher are subject to the new source performance standards (NSPS) in 40 CFR Part 60 Subpart Y.

Colorado Regulation No. 3, Part A, Section I.B.36.(h)(ii) specifies that “any change that is considered a modification under Title I of the act” must be processed as a significant modification. According to Appendix D of Regulation No. 3 (Section I.F, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that “a Title I modification” is a modification that triggers New Source Performance standards. Since the new crusher and the modifications to the coal conveying system trigger NSPS requirements, the addition of the new crusher and the revisions to the coal conveying system must be processed as a significant modification.

The provisions in the Voluntary Emissions Reduction Agreement are State-only requirements and the agreement went through public comment and was approved by the Colorado Air Quality Control Commission (AQCC). Since the Division considers that the changes the source is requesting are non-material the Division considers that modifications to the agreement’s percent reduction calculation methodology may be made as a minor modification.

### **III. Modeling**

Requested PM<sub>10</sub> emissions from the new crusher and revised coal conveying system are less than 1 ton/yr, which is much less than the modeling threshold of 15 tons/yr in the Division’s modeling guidance, therefore, no modeling will be required.

### **IV. Discussion of Modifications Made**

## **Source Requested Modifications**

The Division addressed the source-s requested modifications as follows:

### **Revised Coal Conveying System (from Pile to Plant) and New Coal Crusher**

As discussed in the technical review document for the original Title V permit (issued September 1, 2001), emissions from the existing coal conveying system were below APEN reporting levels; therefore, the existing coal conveying system is considered an insignificant activity and is not included in Section II of the permit. Emissions from the existing coal conveying system were based on AP-42 emission factors for aggregate handling (13.2.4, dated January 1995) and the actual annual coal consumed by the boiler (potential emissions were based on the design capacity of the boiler). These emission factors take into account the mean wind speed, the number of drop/transfer points and the moisture content of the material. The modification application indicates that the capacity of the conveyor system will increase from 400 tons/hr to 500 tons/hr but the total number of transfer points in the conveying system will not change. Therefore, although the revisions to the conveying system will increase the hourly emissions from conveying, the annual emissions do not change, since annual emissions are based on the coal consumed in the boiler. Although annual emissions from the modified coal conveying system would be below APEN de minimis levels and therefore exempt from construction permit requirements, since the revisions to the coal conveying system trigger federal NSPS requirements (due to the hourly emission increase), the APEN reporting and construction permit requirements still apply in accordance with the "catch-all" provisions in Regulation No. 3, Part A, Section II.D.1 and Part B, Section III.D.

**1. Applicable Requirements** –The new crusher and revisions to the coal conveying system will be processed as a combined construction/operating permit as provided for in Colorado Regulation No. 3 Part A, Section I.B.36.h and Part C, Section III.B.7. The appropriate applicable requirements are as follows:

- Coal processing rate shall not exceed 720,000 tons/yr (as requested by the APEN submitted on May 12, 2004).
- Emissions of air pollutants shall not exceed the following limitations (as requested by the APEN submitted on May 12, 2004):
  - PM            0.53 tons/yr
  - PM<sub>10</sub>        0.19 tons/yr
- Construction of this source must commence within 18 months of initial approval permit issuance date or within 18 months of date on which such construction or activity was scheduled to commence as stated in the application (Reg 3, Part B, Section III.F.4.a.(i) thru (ii)).
- Within 180 days after commencement of operation, compliance with the conditions contained on this permit shall be demonstrated to the Division (Reg 3,

Part B, Section III.G.2).

- The permittee shall notify the Division, in writing, thirty (30) days prior to startup (Reg 3, Part B, Section III.G.1).
- 20% opacity (Regulation No. 1, Section II.A.1)

Based on engineering judgment, the Division has not included the 30% opacity requirement for startup, process modification and adjustment of control equipment (Reg 1, Section II.A.4) for the following reasons: 1) startup is instantaneous (begin conveying and/or crushing); 2) process modifications are unlikely since the process of conveying or crushing is straightforward and if modifications were to occur, they could not occur while the unit is in operation (i.e. conveying and/or crushing) and 3) the control equipment cannot be adjusted while conveying or crushing is occurring.

- Standards of Performance for Coal Preparation Plants (40 CFR Part 60 Subpart Y, as adopted in Colorado Regulation No. 6, Part B), specifically:
  - The owner or operator shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system or coal transfer and loading system processing coal, gases which exhibit 20% opacity or greater (40 CFR Part 60 Subpart Y § 60.252(c)).

Note that as specified in 40 CFR Part 60 Subpart § 60.11(c), the opacity standards apply at all times except during periods of startup, shutdown and malfunction.

In addition, the general provisions in 40 CFR Part 60 Subpart A, also apply, as follows:

- Good practices (§ 60.11(d)).
- Circumvention (§ 60.12).
- Conduct performance test in accordance with provisions of §§ 60.8 and 60.11.
- Record startups, shutdown and malfunctions (§ 60.7(b))
- Written notification of opacity observation required by § 60.7(a)(6).

The Division determined that no Regulation No. 1 particulate matter standards were applicable. These operations (crushing and conveying) are not considered fugitive emissions (PM requirements - Reg 1, Section III.D) since these sources can be reasonably controlled. The Division also does not consider coal conveying and crushing to be a manufacturing process (PM requirements - Reg 1, Section III.C) since the coal is not used in manufacturing but is used in fuel burning equipment which has PM requirements in Reg 1, Section III.A.

**2. Emission Factors** - Approval of emission factors is necessary to the extent that emission factors shall be used to monitor compliance with the annual emission limits

The source identified the following emission factors:

A. Coal Conveying: There are no specific emission factors for conveying coal. Therefore, the source proposed to estimate emissions from coal conveying as emissions from each of the drop or transfer points in conveying the coal from the storage pile to the boilers. The Division believes that this is a reasonable method to estimate emissions from coal conveying. The source proposed to use emission factors for drop/transfer points from AP-42 (dated January 1995), Section 13.2.4. Emissions from each transfer point (dropping material on a received surface) can be estimated using the following equation:

$$E = \frac{k \times 0.0032 \times (U/5)^{1.3} \times D \times \text{tons of coal transferred per year}}{(M/2)^{1.4}}$$

Where: E = particulate emissions, lbs/yr  
k = particle size multiplier, dimensionless  
U = mean wind speed, mph  
D = number of transfer points, dimensionless  
M = moisture content, %

Note that permitted emissions are based on five (5) transfer points, a wind speed of 1 mph, a moisture content of 4.5% (based on AP-42, Section 13.2.4, Table 13.2.4-1) and a coal processing rate of 720,000 tons/yr.

The maximum annual coal consumption rate for the boiler is considered to be the maximum potential throughput rate for the coal conveying system. The 720,000 tons/yr is based on the coal-fired boiler running at design rate (1845 mmBtu/hr, ~ 82 tons/hr) for 8760 hrs/yr. Since the boiler is the only coal-fired source at this facility, the boiler's design rate serves as a limit to the potential quantity of coal processed through the coal handling system.

The existing coal conveying system is not addressed as a significant emission unit in the current Title V permit because emissions from conveying were below APEN de minimis levels. The technical review document for the original Title V permit discusses that and indicates that the Division's analysis was based on 6 transfer points and a wind speed of 5.8 miles per hour. In the original Title V permit application (submitted February 15, 1996), the source indicated that there were 7 transfer points in the coal handling system. The Division presumed that one of the transfer points was unloading coal from the railcars (a source of fugitive emissions), which is why the analysis was based on 6 transfer points. However, during processing of the original Title V permit, the source had indicated that they had re-evaluated the coal handling system after the original Title V permit application was submitted and only identified 5 transfer points. The Division failed to note this in the technical review document for the original Title V permit.

In addition, the Division also considered a higher wind speed. A wind speed of 1 mph simulates the enclosed conveyors (i.e. protected from the wind). The Division considered the higher wind speed to be uncontrolled emissions, i.e. no enclosures.

However, after further review the Division considers that the conveyor enclosures are part of the process and not a control device; therefore, it is not necessary to evaluate emissions at a higher wind speed.

B. Coal Crushing: The source proposed to use emission factors from EPA-s FIRE Version 5.0, Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants (EPA-454/R-95-012), dated August 1995 (SCC 3-05-010-10). The emission factors are:

<u>Pollutant</u>	<u>Emission Factor</u>
PM	0.02 lbs/ton coal
PM <sub>10</sub>	0.006 lbs/ton coal

Note that permitted emissions are based on a maximum coal consumption rate of 720,000 tons/yr and a 95% efficiency since the crusher is enclosed and located in a building. The 95% efficiency can be used in calculating emissions provided the integrity of the crusher enclosure and building is maintained.

#### Emission Summary for New Crusher and Revised Coal Conveyors

	Controlled Emissions (tons/yr)		Uncontrolled Emissions (tons/yr)	
Source	PM	PM <sub>10</sub>	PM	PM <sub>10</sub>
Crusher	0.36	0.11	7.2	2.16
Conveying	0.17	0.08	0.17	0.08
<b>Total</b>	<b>0.53</b>	<b>0.19</b>	<b>7.37</b>	<b>2.24</b>

**3. Monitoring Plan** - The source will be required to monitor and record the quantity of coal processed through the coal handling system monthly in order to monitor compliance with the annual limitation. Compliance with the emission limits will be presumed, in the absence of credible evidence to the contrary, provided the enclosures are maintained and that the coal processing limit is not exceeded.

An initial performance test is required on the coal handling system to demonstrate compliance with the opacity requirements. Thereafter, compliance with the opacity limits is presumed, in the absence of credible evidence to the contrary, provided the enclosures are maintained.

#### Voluntary Emissions Reduction Agreement Percent Reduction Calculation Methodology (Appendix G)

The percent reduction calculation methodology requires the source to determine the outlet SO<sub>2</sub> emission rate by dividing the outlet SO<sub>2</sub> emissions (tons/yr) by the annual heat input (mmBtu/yr) based on fuel sampling. Since the outlet SO<sub>2</sub> emission data is taken from the continuous emission monitoring system (CEMS), which also records the heat input rate, the source has indicated that it makes more sense to calculate the emission rate by dividing by the heat input determined by the CEMS. The Division

agrees and has revised Appendix G as requested by the source. The specific changes made to the percent reduction calculation methodology are as follows:

- Removed section 3 (accounting for burning of natural gas)
- Removed the calculation of metrowide total annual gas Btus (section 6).
- Changed the calculation of controlled SO<sub>2</sub> emission rate (Section 9) to use the annual heat input from the CEMS rather than the Btus (heat input) from coal and natural gas as determined from fuel use and fuel sampling data.

#### Lead Emission Calculations and Fuel Sampling for Lead

Although not specifically requested in the modification application, the language in Condition 16.2 was revised to indicate that the source would determine and report lead emissions for APEN reporting purposes based on the calculation methodology and emissions reported in their annual Toxic Release Inventory (TRI) report. This is consistent with the lead emission calculation language included in the November 14, 2003 modified Title V permit for Arapahoe Station.

Since the permit no longer requires that the lead emission calculations use the lead content of the coal, the requirement to sample coal for the lead content in Conditions 1.3 and 17 have been removed.

#### Other Modifications

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this modification.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments on other permits, to the Valmont Station Operating Permit with the source's requested modifications. These changes are as follows:

#### Section I – General Activities and Summary

- Revised the language regarding the status (attainment/non-attainment) of the area in which the source is located to reflect the source is in the 8-hr Ozone Control Area.
- In Condition 1.4, General Condition 3.g (Common Provisions, Affirmative Defense) was added as a State-only requirement.
- Removed Condition 6 (112(j) case-by-case MACT requirements), since all MACT standards have been signed as final and no Part 2 application is required.

The source submitted a notification for the 112(j) case-by-case MACT requirements indicating that the facility was a major source for HAPS and that they had sources that fell under a category (combustion turbines and industrial, commercial, institutional boilers and process heaters) for which EPA failed to promulgate MACT standards by the deadline. The final MACT rule for combustion turbines was published in the federal register and the final MACT rule for industrial, commercial, institutional boilers and process heaters was signed, therefore, a Part 2 application under 112(j) is not required. The sources status with respect to MACT applicability for industrial, commercial, institutional boilers and process heater and combustion turbines, is as follows:

#### Industrial, commercial, institutional boilers and process heaters

The EPA signed the final rule for industrial, commercial, institutional boilers and process heaters on February 26, 2004 but it has not been published in the Federal Register yet. However, based on the final signed rule, it appears that the auxiliary boiler at this facility is subject to limited requirements. As indicated in 40 CFR Part 63 Subpart DDDDD § 63.7506(b)(1), large existing gaseous fuel units are only subject to the initial notification requirements and are not any other requirements in either Subparts A or DDDDD. Since the final rule has not been published in the federal register yet, the initial notification requirement has not been included in the revised permit. Note that if the final rule is published prior to permit issuance, the initial notification requirement will be included in the permit.

#### combustion turbines

The final rule for combustion turbines was published in the federal register on March 5, 2004. As indicated in 40 CFR Part 63 Subpart YYYY § 63.6090(b)(4), existing (commenced construction or re-construction on or before January 14, 2003) combustion turbines in all subcategories do not have to meet the requirements of 40 CFR Part 63 Subparts A and YYYY, including the initial notification requirements. Since the combustion turbine at this facility is an existing unit, the combustion turbine MACT requirements do not apply.

#### Section IV – Permit Shield

- Removed the requirements from 40 CFR Part 60 Subpart Y requirements from the permit shield for non-applicable requirements (Section 1), since the new crusher and upgraded conveying system are subject to those requirements.

#### Section V – General Conditions

- General Condition No. 3 was revised to reflect that 3.g (affirmative defense) is state-only until approved by EPA.